CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET
SACRAMENTO, CA 95814-5512

California Energy Commission
DOCKETED
01-AFC-7C
TN # 70245
APR. 08 2013

DATE: April 8, 2013

TO: Interested Parties

FROM: Bruce Boyer, Compliance Project Manager

SUBJECT: Errata to the Russell City Energy Center Project (01-AFC-7C) Staff Analysis of Proposed Modifications to Amend Air Quality, Visual and Hazardous Materials Conditions of Certification

On April 5, 2013, the California Energy Commission (Energy Commission) Staff published its analysis of the proposed modifications to the Energy Commission's Final Decision (Commission Decision) for the Russell City Energy Center (RCEC) project.

Energy Commission Staff has identified the need to publish an errata to make a correction to Condition of Certification **VIS-2** and make minor corrections to several Air Quality Conditions of Certification. The revisions to the April 5, 2013, filing are shown in ~~**bold double strike out**~~ for deletions and **bold double underline** for additions.

On November 8, 2012, Russell City Energy Company, LLC, owner of the RCEC, filed a Petition to Amend with the Energy Commission to modify the Energy Commission's Final Decision for the RCEC project. RCEC requested to bifurcate the Air Quality portion of the amendment on December 20, 2012. On February 13, 2013 a request to change the **VIS-10** portion of the amendment was received. Energy Commission staff received an addendum to the November 8 submittal that requested modification of **AQ-SC12** and **HAZ-5**. Commission staff (staff) prepared an analysis of these proposed changes, and a copy is enclosed for your information and review.

The RCEC project will be a 600 MW combined cycle power plant located in the City of Hayward, in Alameda County. The project was certified by the Energy Commission in October of 2007, is currently under construction and is approximately 88 percent complete.

The requested modifications would (1) modify Condition of Certification **VIS-2** to allow onsite landscape planting in the first optimal planting season following commercial operation; (2) delete Condition of Certification **VIS-9** (trailside improvements) because the condition is not feasible and is no longer necessary; (3) modify Condition of Certification **VIS-10** to provide alternative offsite visual enhancement measures; (4) make certain clarifications to various **AIR QUALITY** Conditions of Certification; and (5) modify Condition of Certification **HAZ-5** to allow a setback of less than 50 feet between the sulfuric acid tank and any combustible or flammable materials if (a) the Chief Building Official (CBO) approves the design and construction of a physical barrier or firewall that is consistent with applicable fire prevention standards; and (b) a physical barrier or firewall is constructed and maintained consistent with the CBO's specifications and approved by the Energy Commission Compliance Project Manager.

In response to the amendment filing by the project owner, and subsequent Notice of Receipt published by Energy Commission staff, several comments were received by interested parties. Only the comments that are the subject of the amendment are addressed in the staff analysis. This analysis will not address the project owner's request to modify Condition of Certification **VIS-10**. Staff's analysis of the request to modify **VIS-10** will be published at a later date.

Staff has reviewed the petition and assessed the impacts of the proposed modifications on environmental quality, public health and safety, and proposes revisions to the Commission Decision and existing conditions of certification **VIS-2**, **HAZ-5**, **AQ-10**, **AQ-11**, **AQ-12**, **AQ-19**, **AQ-20**, **AQ-22, AQ-23, AQ-26**, **AQ-27**, **AQ-29**, **AQ-30**, **AQ-31**, **AQ-32**, **AQ-33, AQ-34**, **AQ-42**, **AQ-44**, **AQ-45**, and **AQ-SC13**. Staff also proposes to delete conditions of certification **VIS-9 and AQ-SC12.**

It is staff's opinion that, with the implementation of the revised conditions, the project will remain in compliance with applicable laws, ordinances, regulations, and standards (LORS).

The amendment petition and staff's analysis have been posted on the Energy Commission's webpage at:
http://www.energy.ca.gov/sitingcases/russellcity_amendment/amendment_four/index.html

The Energy Commission's Order (if approved) will also be posted on the webpage. Energy Commission staff intends to recommend approval of the petition (with the exception of **VIS-10**) at the May 8, 2013, Business Meeting of the Energy Commission.

Agencies and members of the public who wish to provide written comments on the Staff Analysis are asked to submit comments to the Energy Commission Dockets Unit **prior to 5:00 p.m. May 6, 2013**. Please include the docket number 01-AFC-7C in the subject line of your comments. Those submitting comments electronically should provide them in either Microsoft Word format or as a Portable Document Format (PDF) to docket@energy.ca.gov. Please include your name or organization's name in the file name. Those preparing non-electronic written comments should mail or hand deliver them to:

California Energy Commission
Dockets Unit, MS-4
Docket No. 01-AFC-7C
1516 Ninth Street
Sacramento, CA 95814-5512

All written comments and materials filed with the Dockets Unit will become part of the public record of the proceeding. Additionally, comments may be posted on the website.

If you have questions about the Petition to Amend or staff's analysis, please contact Bruce Boyer, Compliance Project Manager at (916) 653-7181 or email at Bruce.Boyer@energy.ca.gov.

If you desire information on participating in the Energy Commission's review of the project, please contact the Energy Commission's Public Adviser's Office at (916) 654-4489 or toll free in California, at (800) 822-6228. The Public Adviser's Office can also be contacted via email at publicadviser@energy.ca.gov.

News media inquiries should be directed to the Energy Commission Media Office at (916) 654-4989, or by e-mail at mediaoffice@energy.state.ca.us.

Enclosure

RUSSELL CITY ENERGY CENTER PROJECT (01-AFC-7C)
PETITION TO AMEND THE ENERGY COMMISSION DECISION
INTRODUCTION AND SUMMARY

Prepared by: Bruce Boyer, CPM

INTRODUCTION AND SUMMARY

On November 8, 2012, Russell City Energy Company, LLC, owner of the Russell City Energy Center (RCEC or Applicant), filed a Petition to Amend with the California Energy Commission (Energy Commission) to modify the Energy Commission's Final Decision (Commission Decision) for the RCEC project. RCEC requested to bifurcate the Air Quality portion of the amendment on December 20, 2012. On February 13, 2013 a request to change the **VIS-10** portion of the amendment was received. Energy Commission staff received an addendum to the November 8 submittal that requested modification of **AQ-SC12** and **HAZ-5**. Commission staff (staff) prepared an analysis of these proposed changes, and a copy is enclosed for your information and review.

The proposed modifications would (1) modify Condition of Certification **VIS-2** to allow onsite landscape planting in the first optimal planting season following commercial operation; (2) delete Condition of Certification **VIS-9** (trailside improvements); (3) modify Condition of Certification **VIS-10** to provide alternative offsite visual enhancement measures; (4) make certain non-substantive clarifications to various **AIR QUALITY** Conditions of Certification; and (5) modify Condition of Certification **HAZ-5** to allow a setback of less than 50 feet between the sulfuric acid tank and any combustible or flammable materials if (a) the Chief Building Official (CBO) approves the design and construction of a physical barrier or firewall that is consistent with applicable fire prevention standards; and (b) a physical barrier or firewall is constructed and maintained consistent with the CBO's specifications and approved by the Energy Commission Compliance Project Manager.

Staff's analysis of the request to modify **VIS-10** will be published at a later date.

DESCRIPTION AND NECESSITY OF THE PROPOSED MODIFICATIONS

Various Air Quality modifications to Conditions of Certification will make certain clarifications and administrative amendments to provisions governing monitoring and initial source testing and to conform with the corresponding conditions in the Authority to Construct air permit issued by BAAQMD;

Changes to the Air Quality Conditions of Certification are necessary to make clarifications in certain monitoring and testing requirements and assure consistency between the project's Energy Commission license and the conditions of the ATC permit. Certain administrative changes are needed to specify how monitoring and testing for compliance with the applicable emissions limits will be conducted. The necessity for these proposed changes could not be anticipated at the time when the project was approved by the Commission because the need for clarification did not arise until the data acquisition system (DAS) that will be used to monitor compliance with applicable requirements was being designed and its programming logic established by the

construction contractor and equipment vendors. Other changes, such as the need for additional time to complete source testing, were not known until the sequencing of the commissioning process was established by the construction contractor. RCEC did not know at the time the project was approved, that certain administrative amendments to the Air Quality Conditions of Certification would be needed to clarify certain monitoring and testing requirements and assure consistency with the corresponding conditions of the ATC.

The revision to the Condition of Certification **VIS-2** for onsite landscaping changes the timeframe for onsite planting to a time when onsite construction activities will not harm newly planted trees and vegetation.

On November 17, 2006, RCEC filed a petition with the Energy Commission to move the location of the project 1,300 feet northwest of the site location approved by the Energy Commission in September 2002. This petition to move the location was approved by the Energy Commission on September 26, 2007. Condition of Certification **VIS-9** (trailside improvements), had been proposed in 2002 because the project at the location certified in 2002 would have blocked the view of Mt. Diablo from the Hayward Shoreline Interpretative Center. However, subsequent to the 2002 Decision, the project owner relocated the project to a location which no longer blocked the view of Mt. Diablo from the Center. Therefore, the project owner maintains that **VIS-9** is no longer necessary.

The proposed modification of Condition of Certification **HAZ-5** would allow the storage, usage, and transportation of combustible or flammable materials within less than 50 feet of the sulfuric acid tank if (a) the Chief Building Official (CBO) approves the design and construction of a physical barrier or firewall that is consistent with applicable fire prevention standards; and (b) a physical barrier or firewall is constructed and maintained consistent with the CBO's specifications and approved by the Energy Commission Compliance Project Manager.

STAFF'S ANALYSIS OF THE PROPOSED PROJECT CHANGES

Energy Commission technical staff has reviewed the Petition to Amend for potential environmental effects and consistency with applicable LORS. Staff has determined that the technical or environmental areas of biological resources, cultural resources, facility design, noise resources, land use, paleontological resources, public health, geological hazards, water resources, traffic and transportation, transmission line safety and nuisance, transmission system engineering, waste management, worker safety & fire protection, and socioeconomics are not affected by the proposed changes, and no revisions or new conditions of certification are needed to ensure the project remains in compliance with all applicable LORS. **Table 1** summarizes staff's review.

Staff has reviewed the petition and assessed the impacts of the proposed modifications on environmental quality, public health and safety, and proposes revisions to the Commission Decision and existing conditions of certification **VIS-2**, **HAZ-5**, **AQ-10**, **AQ-11**, **AQ-12**, **AQ-19**, **AQ-20**, **AQ-22, AQ-23, AQ-26**, **AQ-27**, **AQ-29**, **AQ-30**, **AQ-31**, **AQ-32**, **AQ-33, AQ-34**, **AQ-42**, **AQ-44**, **AQ-45** and **AQ-SC13**. Staff also proposes to delete conditions of certification **VIS-9** and **AQ-SC12.**

Staff has determined that with the adoption of the attached Air Quality conditions of certification, the project would remain in compliance with all applicable laws, ordinances, regulations, and standards (LORS).

Staff concludes that the proposed change to **HAZ-5** does not pose a significant risk of accidental sulfuric acid release and that the reduced separation distance between the sulfuric acid tank and the nearby transformers does not violate the intent of **HAZ-5**, nor does it create a significant risk of public exposure to a toxic sulfuric acid release.

Staff has concluded that the proposed modifications to the identified visual resource Conditions of Certification **VIS-2** and **VIS-9** would not result in a significant adverse impact pertaining to "aesthetics" according to CEQA and the CEQA guidelines and would not cause the project to be inconsistent with applicable LORS that pertain to physical and visible aesthetics, and the preservation and protection of landscape components.

It is staff's opinion that, with the implementation of the revised conditions, the project will remain in compliance with applicable laws, ordinances, regulations, and standards (LORS).

Staff recommends approving the modifications and deletions for the above mentioned Air Quality, Hazardous Material and Visual Resources Conditions of Certification.

EXECUTIVE SUMMARY Table 1
SUMMARY OF TECHNICAL AREA RESPONSE TO PETITION

TECHNICAL AREAS REVIEWED	STAFF RESPONSE			New, Revised, or Removed Conditions of Certification Recommended
	Technical Area Not Affected	No Significant Environmental Impact*	Process As Amendment	
Air Quality			X	X
Biological Resources	X			
Cultural Resources	X			
Hazardous Materials Management			X	X
Facility Design	X			
Noise Resources	X			
Land Use	X			
Paleontological Resources	X			
Public Health	X			
Geological Hazards	X			
Water Resources	X			
Traffic and Transportation	X			

TECHNICAL AREAS REVIEWED	STAFF RESPONSE			New, Revised, or Removed Conditions of Certification Recommended
	Technical Area Not Affected	No Significant Environmental Impact*	Process As Amendment	
Transmission Line Safety & Nuisance	X			
Transmission System Engineering	X			
Visual Resources			X	X
Waste Management	X			
Worker Safety & Fire Protection	X			
Socioeconomics	X			

*There is no possibility that the modifications may have a significant effect on the environment and the modification will not result in a change or deletion of a condition adopted by the commission in the final decision or make changes that would cause the project not to comply with any applicable laws, ordinances, regulations, or standards (lors) (20 cal. Code regs., § 1769 (a) (2))

RUSSELL CITY ENERGY CENTER (01-AFC-7C)

Addendum to the Petition for Modification No. 4
Request to Amend Condition of Certification HAZ-5

Analysis for Technical Sections: Hazardous Materials Management and Worker-Safety/Fire Protection
Prepared by: Geoff Lesh
April 5, 2013

INTRODUCTION

The proposed changes to the limitations for storage, use, and transportation of combustible and flammable materials are an amendment to Condition of Certification **HAZ-5** of the Russell City Energy Center Project approved in 2007.

Condition of Certification **HAZ-5** requires that a minimum distance of 50 feet be maintained between combustible or flammable materials and the sulfuric acid tank. This condition is intended to protect against the potential release of sulfuric acid through volatilization in the event of fire. In order to provide greater flexibility in the layout and design of the project, while maintaining the necessary precautions to protect from the risk of fire, the project owner requests that Condition of Certification **HAZ-5** be modified to allow a setback of less than 50 feet between the sulfuric acid tank and any combustible or flammable materials if (a) the CBO approves the design and construction of a physical barrier or firewall that is consistent with applicable fire prevention standards; and (b) a physical barrier or firewall is constructed and maintained consistent with the CBO's specifications.

Because changing locations and proximities of combustible materials could affect fire protection provisions at the facility, Staff also reviewed the proposed change to **HAZ-5** for potential impacts in the technical area of **Worker-Safety/Fire Protection,** and determined that it would have no negative impact.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS) COMPLIANCE

No LORS applicable to the project have changed since the Commission Decision was published in 2007.

ANALYSIS

Staff has reviewed the petition for potential environmental effects and consistency with applicable LORS.

The proposed change to **HAZ-5** does not pose a significant risk of accidental sulfuric acid release. There is no code requirement for a separation distance of 50 feet. The original basis for the 50 foot setback of sulfuric acid from combustible materials was conservatively determined by Staff to avoid the potential mixing of sulfuric acid with such combustible materials and subsequent combustion resulting in toxic release of

sulfuric acid or acidic byproducts of combustion. The proposed modification to **HAZ-5** would allow for combustibles to be stored, used, or transported within distances of less than 50 feet only when a suitable fire wall has been installed to prevent line-of-sight radiant heat transfer to the acid storage tank from the combustible materials should they catch fire.

In the present case, at the Russell City facility, due to space constraints, there is a need to have some supplemental electrical transformers, which are sealed but contain combustible mineral oil, closer than 50 feet from the sulfuric acid storage tank. While sulfuric acid could be volatilized by over-heating of a storage tank, in the present case there is not sufficient combustible material contained within the transformers in question to heat the large amount of sulfuric acid in the nearby storage tank. Both the sulfuric acid storage tank and transformers have independent catchment basins that prevent migration of spilled material. The existing safety procedures to avoid introduction of sulfuric acid to the oil water separation system also provide for reduced risk of accidental mixing. The addition of a fire wall separating the transformers from the sulfuric acid storage tank will provide substantial thermal isolation of the sulfuric acid tank in the event of a transformer fire involving their mineral oil contents. Staff concludes that the reduced separation distance between this sulfuric acid tank and the nearby transformers does not violate the intent of **HAZ-5** nor does it create a significant risk of public exposure to a toxic sulfuric acid release. Staff also concludes that the proposed change does not negatively impact fire prevention/protection at the facility.

Staff therefore, recommends approval of the proposed amendment.

CONCLUSIONS AND RECOMMENDATIONS

Given the low probability of failure of transformers and storage tanks built and operated to modern codes and standards, and the low consequences likely to result from any such failures, staff believes that the potential for impact on the public due to the proposed change in Condition of Certification **HAZ-5** is insignificant for both of the technical areas of **Hazardous Materials Management** and **Worker-Safety/Fire Protection**. Staff therefore proposes that the proposed modification to Condition of Certification **HAZ-5** be adopted.

PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION

Accordingly, the project owner requests that the following modification to HAZ-5 be added to Amendment No. 4.

HAZ-5 is modified with the following wording addition shown in **bold/underline**.

HAZ-5 The project owner shall ensure that no combustible or flammable material is stored, used, or transported within 50 feet of the sulfuric acid tank, **or within less than 50 feet, provided the project owner constructs or installs a physical barrier between the sulfuric acid tank and the location of any combustible or flammable material that meets design and construction requirements established by the California Building Code, as verified by the CBO.**

Verification: At least sixty (60) days prior to receipt of sulfuric acid on-site, the project owner shall provide to the CPM for review and approval copies of the facility design drawings showing the location of the sulfuric acid storage tank and the location of any tanks, drums, or piping containing any combustible or flammable material and the route by which such materials will be transported through the facility.

REFERENCES

Russell City Energy Center Amendment No. 1 Final Commission Decision (01-AFC-7C), October 2007. Docketed October 2, 2007.

Russell City Energy Company, LLC. Russell City Energy Center Petition to Amend Commission Decision for Russell City Energy Center (Amendment No. 4) (01-AFC-7C). Docketed November 8, 2012.

Email communication from Allison Bryan (for Calpine) to Bruce Boyer (Energy Commission CPM) regarding proposed changes to HAZ-5., April 3, 2013

RUSSELL CITY ENERGY CENTER (01-AFC-7C)
Request to Amend Conditions of Certification VIS-2, VIS-9, and VIS-10

VISUAL RESOURCES
Mark R. Hamblin

AMENDMENT REQUEST

On November 8, 2012, Russell City Energy Company, LLC filed a Petition to Amend the Commission Decision for the Russell City Energy Center (Amendment No. 4) to do the following: modify the wording in Conditions of Certification **VIS-2** and **VIS-10**, and delete Condition of Certification **VIS-9**.

BACKGROUND

In 2001 Calpine/Bechtel Joint Development proposed to build a 600 megawatt natural gas-fired, combined-cycle electric generating facility (Russell City Energy Center) at the intersection of Enterprise and Whitesell streets in the "Industrial Corridor" of the City of Hayward, California. The Russell City Energy Center was approved (licensed) by the Energy Commission on September 11, 2002.

The 2002 license issued for the Russell City Energy Center (project) included ~~a~~ visual resources Condition of Certification **VIS-2** which requires the project owner to provide landscaping on the project site. Condition of Certification **VIS-9** required trailside improvements to mitigate for the original project's blocking of the public view of Mt. Diablo from the Hayward Shoreline Interpretive Center in the Hayward Regional Shoreline, west of the City of Hayward; and, Condition of Certification **VIS-10** a requirement for an off-site landscaping plan that included the planting of trees along the west side of industrial and business park complexes and warehouses that line the Hayward Regional Shoreline. Conditions of Certification **VIS-2** and **VIS-9** were subsequently amended in Russell City Energy Center Amendment No. 1, October 2007.

For various reasons, the project owner was not able to construct the facility on the approved site. A succeeding owner, Russell City Energy Company, LLC proposed to build the same facility with modifications in layout and associated equipment on a site on Depot Road 1,300 feet northwest of the approved location. The Energy Commission approved the new power plant location and redesign in October 2007.

On November 8, 2012, Russell City Energy Company, LLC filed a fourth Petition to Amend the Commission Decision for the Russell City Energy Center that included the following:

- modify Condition of Certification **VIS-2** to allow onsite landscaping to be planted after the start of commercial operation;
- delete Condition of Certification **VIS-9**; and,
- modify Condition of Certification **VIS-10** to allow in addition to the planting of trees, other plantings (e.g., bushes, shrubs, grasses), the installation of non-plant related

landscaping visual improvement items (e.g., masonry work, soil berms, slat inserts in fences), and the use of surface treatments (e.g., painting) on buildings and structures on neighboring properties to be completed 18 months after the start of commercial operation; and, to allow the use of planter containers.

See **Visual Resources Figure 1** – Google Earth Image Showing Location of the Russell City Energy Center and the Hayward Shoreline Interpretive Center, **Visual Resources Figure 2** – Aerial View of Russell City Energy Center Under Construction, **Visual Resources Figure 3** -View of Russell City Energy Center Under Construction in the City of Hayward "Industrial Corridor" from San Francisco Bay Trail in the Hayward Regional Shoreline, and **Visual Resources Figure 4** – View of the "Industrial Corridor" South of the Russell City Energy Center from San Francisco Bay Trail.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS COMPLIANCE

No federal, state or local government laws, ordinances, regulations and standards (LORS) pertaining to physical and visible aesthetics, and the preservation and protection of landscape components are affected by the proposed changes to the Energy Commission's visual resources conditions of certification.

ANALYSIS

This analysis does not address the project owner's request to modify Condition of Certification **VIS-10**. Staff's analysis of the request to modify **VIS-10** will be published at a later date. Staff is requesting additional information from the project owner regarding feasible alternatives to the original (2002) offsite landscaping requirement. Information at the time of the original licensing of the project indicated that the project owner's offsite landscaping proposal was feasible. Recent information indicates an unwillingness of current landowners to accept landscaping on their properties and significant limitations for landscaping in the original offsite locations.

PROPOSED WORDING MODIFICATION TO CONDITION OF CERTIFICATION VIS-2

Condition of Certification **VIS-2** as amended in Amendment No. 1 requires the project owner to provide landscaping on the project site. The proposed revision to the condition for onsite landscaping changes the timeframe for planting to after the start of commercial operation when onsite construction activities will not harm the planting of new trees and vegetation. The project owner indicates under their current schedule for commercial operation, **VIS-2** requires trees to be planted near major buildings, structures and equipment (e.g., cooling towers) while they are under construction.

The project owner requests a modification to Condition of Certification **VIS-2** to allow onsite landscaping to be completed by the first optimal season after the start of

commercial operation. The optimal season for planting is defined as occurring in Spring (March through June) and Fall (September through November).

Staff has proposed wording in **VIS-2** that the onsite landscaping be completed within 90 days of the commercial operation date. The delay in planting the landscaping would have a negligible impact on the effectiveness of the mitigation.

The requested changes to Condition of Certification **VIS-2** specific to the timing of the planting of onsite landscaping will not cause a significant effect on the environment for the purposes of the California Environmental Quality Act (CEQA) and the CEQA Guidelines.

PROPOSED DELETION OF CONDITION OF CERTIFICATION VIS-9

When the Russell City Energy Center was originally licensed in 2002, the power plant was sited at a location where "it would substantially block the view of Mt. Diablo from the Hayward Shoreline Interpretive Center" (Russell City Energy Center Project Final Staff Assessment, June 2002, p. 4.11-18). To mitigate the blocking of the view of Mt. Diablo from the Interpretive Center, the project owner agreed "to install benches, an information kiosk, information panels, and free-of-charge viewscopes at two nearby locations on a Shoreline trail where views toward Mt. Diablo would not be affected by the project" (Russell City Energy Center Amendment No. 1 Final Commission Decision, October 2007, p. 195). See **Visual Resources Figure 5** – Original Project's KOP 2 – Existing View from Hayward Shoreline Interpretive Center Looking Northeast (2002).

During November 2006, Russell City Energy Company, LLC requested a change to their license to relocate the Russell City power plant 1,300 feet from its original approved site. Though the project was being relocated, the project owner remained willing to provide the trailside improvements identified in Condition of Certification **VIS-9**; therefore **VIS-9** was retained by staff in the staff assessment prepared for Amendment No. 1. Staff stated in the staff assessment "Unlike the original project, the relocated project would be outside of the direct line-of-sight of Mt. Diablo from the Hayward Regional Shoreline Interpretive Center" (Russell City Energy Center Staff Assessment Amendment No. 1, June 2007, p. 4.12-6). See **Visual Resources Figure 3**.

In October 2007, the Energy Commission adopted Russell City Energy Center Amendment No. 1.The Final Commission Decision for Amendment No. 1 states the following:

> "At its original location, the project would block views of Mt. Diablo from KOP 2, the Hayward Regional Shoreline Interpretive Center. To mitigate the impact, Condition **VIS-9** required the project owner to install benches, an information kiosk, information panels, and free-of-charge viewscopes at two nearby locations on a Shoreline trail where views toward Mt. Diablo would not be affected by the project. At its new location, the amended project will no longer create the visual impact. The Applicant remains willing to provide the amenities, however, and proposes clarifying amendments to Condition

> **VIS-9**. Staff agrees with the proposal. (Ex. 100, p. 4.12-8.)" (Russell City Energy Center Amendment No. 1 Final Commission Decision, October 2007, p. 195)."

The Hayward Area Recreation and Park District (HARD) maintains and operates the Hayward Regional Shoreline for the East Bay Regional Park District. The project owner has informed staff that the HARD Board of Directors has declined to enter into an agreement with them to provide the identified trail improvements required in **VIS-9**. Without HARD Board approval, the project owner cannot complete **VIS-9.** Since **VIS-9** is no longer required to mitigate a significant visual impact, the project owner has requested it to be deleted.

Deletion of Condition of Certification **VIS-9** will not create a significant aesthetic effect on the environment for the purposes of CEQA and the CEQA Guidelines. The original CEQA nexus that resulted in Condition of Certification **VIS-9** no longer exists. The project owner redesigned and relocated the Russell City Energy Center, so that it is outside of the direct line-of-sight of Mt. Diablo from the Hayward Regional Shoreline Interpretive Center (KOP 2).

HARD Correspondence

The California Energy Commission received a letter from John Gouveia, the General Manager of HARD, docketed December 31, 2012 (01-AFC-7c/TN# 68991), regarding the project owner's current petition to amend. The letter includes the following:

> "In 2010 and 2011, HARD attempted to negotiate with Calpine to mitigate the impacts of the energy center on Shoreline Park and its visitors. HARD proposed an agreement (see Attachment D, letter dated November 3, 2010), that would have better mitigated the impacts, but was not accepted by the RCEC (*Russell City Energy Center*). Now, the RCEC wants VIS-9 deleted. How will the visual impacts on HARD properties from the energy center be mitigated? HARD would also request that the CEC require the RCEC to complete Environmental Impact Reports (EIR) on all FAA requirements as they impact the Bay Trail and shoreline habitats and insure the implementation of the mitigation measures. The EIR should at a minimum look at lighting, exhaust plume and air traffic relocation as they all impact the HARD Shoreline Park and our habitats.
>
> These matters are of great concern to HARD and are the reason why our Board of Directors have chosen not to enter into an agreement for the **VIS-9** requirements and have made it quite clear to staff that they will not do so until these questions are answered. We ask that the CEC *deny* the request to delete this requirement and requests that the CEC direct RCEC to return to the table and work with HARD to amend **VIS-9** and other requirements to address the above issues so that a satisfactory mitigation plan may be adopted by the CEC."

As discussed in the Final Commission Decision for Amendment No. 1, visual impacts to the Shoreline Park are mitigated by Visual Resources Conditions of Certification **VIS-2** (onsite landscaping), **VIS-3** (surface treatment), and **VIS-10** (offsite landscaping). **VIS-9** was specifically intended to address the original project's blocking of the view of Mt. Diablo from the Interpretive Center. With the relocation of the project, **VIS-9** is no longer necessary. Other concerns raised by HARD regarding lighting, exhaust plumes, and air traffic relocation were addressed in the Amendment No. 1 proceeding and are outside the scope of the current amendment before the Commission.

CONCLUSIONS AND RECOMMENDATIONS

Staff has reviewed the project owner's Petition to Amend the Commission Decision and concludes the proposed changes to Conditions of Certification **VIS-2** and **VIS-9** would not result in a significant adverse impact pertaining to "aesthetics" according to CEQA and the CEQA Guidelines.

The proposed changes to **VIS-2** and **VIS-9** would not cause the project to be inconsistent with applicable LORS that pertain to physical and visible aesthetics, and the preservation and protection of landscape components. Staff recommends the proposed modifications to Conditions of Certification **VIS-2** and **VIS-9**, below.

PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION

VIS-2 is modified with the following wording shown in **<u>bold/underline</u>** and ~~strikeout~~.

VIS-2 ~~Prior to the first turbine roll~~ **The** project owner shall prepare and implement an approved onsite landscape plan to screen the power plant from view to the greatest extent possible. Suitable irrigation shall be installed to ensure survival of the plantings. Landscaping shall be installed consistent with the City of Hayward zoning ordinance and with the U.S. Fish and Wildlife Service's recommendations, if applicable, that plants not provide opportunities for perching by birds of prey.
<u>Protocol:</u> The project owner shall submit a landscape plan to the City of Hayward for review and comment, and to the CPM for review and approval. The submittal to the CPM shall include the City's comments. The plan shall include, but not be limited to:

1) A detailed landscape, grading, and irrigation plan, at a reasonable scale, which includes a list of proposed tree and shrub species and installation sizes, and a discussion of the suitability of the plants for the site conditions and mitigation objectives.

2) An installation schedule. The project owner shall not implement the landscape plan until the project owner receives approval of the plan from the CPM. ~~**The planting must be completed by the start of commercial operation, and the planting must occur during the optimal planting season.**~~

3) Maintenance procedures, including any needed irrigation and a plan for routine annual or semi-annual debris removal for the life of the project; and

4) A procedure for monitoring for and replacement of unsuccessful plantings for the life of the project.

The project owner shall not implement the plan until the project owner receives approval of the plan from the CPM.

Verification: ~~Prior to the first turbine roll~~ **A**t least 60 days prior to installing the landscaping**;** the project owner shall submit the landscape plan to the CPM for review and approval.

If the CPM notifies the project owner that revisions of the submittal are needed before the CPM would approve the submittal, within 30 days of receiving that notification, the project owner shall prepare and submit to the CPM a revised submittal.

The project owner shall complete installation of the landscaping within 90 days of the commercial operation date. The project owner shall notify the CPM within seven days after completing installation of the landscape screening that the planting and irrigation system are ready for inspection.

The project owner shall report landscape maintenance activities, including replacement of dead vegetation, for the previous year of operation in the Annual Compliance Report.

VIS-9 deleted in its entirety.

~~**VIS-9** Prior to commercial operation, the project owner shall install new trailside amenities in the Hayward Regional Shoreline that may include, benches, free-of-charge viewscopes, and an information kiosk and set of low panels for the display of interpretive information related to Mt. Diablo and other important elements of the regional setting. The project owner shall work with the Hayward Area Recreation and Parks District (HARD) to develop the final designs for these facilities. As part of this measure, the project owner shall provide the HARD with an adequate budget that would allow its Staff to research and prepare the interpretive materials to be mounted on the kiosk and panels. The project owner shall determine the precise location of the trailside amenities in consultation with the CPM and the HARD.~~

~~**Verification:** Within 12 months after the start of HRSG construction, the project owner shall submit a final design plan for the trailside amenities to the HARD for review and comment and to the CPM for review and approval. If the CPM notifies the project owner that revisions are needed before the CPM would approve the plan, within 30 days of receiving that notification the project owner shall submit a revised plan to the CPM.~~

~~Not less than thirty 30 days prior to the first turbine roll, the project owner shall notify the CPM that the trailside amenities are ready for inspection.~~

RESPONSE TO AGENCY AND PUBLIC COMMENT

STAFF RESPONSE TO CITY OF HAYWARD DEPARTMENT OF PUBLIC WORKS – UTILITES & ENVIRONMENTAL SERVICES letter dated January 17, 2013 (docketed January 23, 2013, 01-AFC-7c/TN #69285)

1. City of Hayward comment first page, third paragraph of letter regarding **VIS-9**.

   Staff Response – See staff discussion under Proposed Deletion of Condition of Certification **VIS-9.**

2. City of Hayward comment second page, first paragraph of letter regarding **VIS-10**.

   Staff Response – This analysis does not address the project owner's request to modify Condition of Certification **VIS-10**. Staff's analysis of the request to modify **VIS-10** will be published at a later date.

3. City of Hayward comment second page, second paragraph states the following:

   "*It is important to note that VIS-9 and VIS-10 in their present forms reflects a significantly reduced obligation on the project, and are far less costly to implement compared to the original plan to construct and architectural shield and artwork. This architectural treatment would have purportedly cost several million dollars*."

   Staff Response – Staff agrees the deletion of **VIS-9** would result in an expenditure not being made by Calpine. Staff's analysis of the request to modify **VIS-10** will be published at a later date.

   The Hayward City Council voted unanimously to allow Calpine to eliminate/remove the architectural treatment, "*the wave,*" from the Russell City Energy Center project. See the October 11, 2005 Minutes of Special Joint Meeting of the City Council/Redevelopment Agency of the City of Hayward and Agenda Report for Resolution 05-125 "Resolution Authorizing the Execution of a Cooperation and Option Agreement with the Russell City Energy Center, LLC."

   The California Energy Commission in its Final Commission Decision for Russell City Energy Center Amendment No. 1, October 2007 approved the elimination of the architectural treatment originally proposed for the project. The Final Commission Decision states the following:

   ". . *the treatment was included at the behest of the City of Hayward in order to achieve consistency with City General Plan provision encouraging enhancement of entrances to the City with 'distinctive planting, signing or architecture.' The Staff Assessment also reports a subsequent change of position on the City's part. In an agenda report to the City Council in October 2005, City staff supported Calpine's request to eliminate the 'Wave' structure.*"

STAFF RESPONSE TO LEAGUE OF WOMEN VOTERS-EDEN AREA letter dated March 21, 2013 (docketed March 22, 2013, 01-AFC-7c/TN #70024)

4. League of Women Voters comment page 2; item number 1 regarding proposed modification to condition of certification **VIS-2** and **VIS-10**.

   Staff Response – **VIS-2** pertains to the timing of the completion of the installing/planting of landscaping on the project site. **VIS-2** is being modified to include wording that states the project owner shall complete installation/planting of the landscaping within 90 days of the commercial operation date.

   This analysis does not address the project owner's request to modify Condition of Certification **VIS-10**. Staff's analysis of the request to modify **VIS-10** will be published at a later date.

5. League of Women Voters comment page 3; item number 2 regarding opposing the deletion of **VIS-9** and that substantial additional mitigation is needed.

   Staff Response – See staff discussion under Proposed Deletion of Condition of Certification **VIS-9**.

REFERENCES

California Energy Commission/Bruce Boyer, Compliance Project Manager. Email to John Gouveia, General Manager of Hayward Area Recreation and Park District, response to the Board of Directors questions regarding Energy Commission Conditions of Certification for the Russell City Energy Center dated August 15, 2012. Docketed January 3, 2013 (01-AFC-7c/TN #69031).

Calpine Corporation/Allison Bryan, EHS Manager. Email to Mark Hamblin, Planner II, Photograph of Trees along Warehouse Bordering Hayward Regional Shoreline dated January 31, 2013.

City of Hayward. "Minutes of Special Joint Meeting of the City Council/Redevelopment Agency of the City of Hayward," City of Hayward, CA dated October 11, 2005.

Hayward Area Recreation And Park District/John Gouveia, General Manager. Letter to California Energy Commission expressing the HARD Board of Directors concerns regarding Russell City Energy Center's Petition To Amend, dated December 28, 2012. Docketed December 31, 2012 (01-AFC-7c/TN #68991).

Russell City Energy Center Amendment No. 1 Final Commission Decision (01-AFC-7c), October 2007. Docketed October 2, 2007.

Russell City Energy Center Commission Decision (01-AFC-7) July 2002. Docketed September 11, 2002.

Russell City Energy Center, LLC. Russell City Energy Center Application For Certification (01-AFC-7), July 2001.

Russell City Energy Center Project Final Staff Assessment (01-AFC-7), June 2002. Docketed June 10, 2002.

Russell City Energy Center Staff Assessment Amendment No. 1 (01-AFC-7c), June 2007. Docketed June 29, 2007.

Russell City Energy Company, LLC. Russell City Energy Center Petition to Amend Commission Decision for Russell City Energy Center (Amendment No. 4) (01-AFC-7C). Docketed November 8, 2012.

VISUAL RESOURCES - FIGURE 1

Russell City Energy Center, Amendment 4 - Google Earth Image Showing Location of the RCEC, and Hayward Shoreline Interpretive Center

VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Google Earth

VISUAL RESOURCES - FIGURE 2

Russell City Energy Center, Amendment 4 -Aerial View of Russell City Energy Center Under Construction

VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Calpine Photo -January 2013

VISUAL RESOURCES - FIGURE 3

Russell City Energy Center, Amendment 4 -View of Russell City Energy Center Under Construction in the City of Hayward “Industrial Corridor” from San Francisco Bay Trail in the Hayward Regional Shoreline

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Staff Photo -2/28/2013

VISUAL RESOURCES - FIGURE 4

Russell City Energy Center, Amendment 4 - View of the “Industrial Corridor” South of the Russell City Energy Center from San Francisco Bay Trail

VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Staff Photo -2/28/2013

VISUAL RESOURCES - FIGURE 5

Russell City Energy Center, Amendment 4 - Original Project's KOP 2 - Existing View from Hayward Shoreline Interpretive Center Looking Northeast

VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: Calpine/Bechtel

RUSSELL CITY ENERGY CENTER (01-AFC-7C)
Amendment No. 4 and Addendum

Air Quality Analysis
Wenjun Qian, Ph.D., P.E.

SUMMARY OF CONCLUSIONS

Staff finds that with the adoption of the attached conditions of certification, the modified Russell City Energy Center project (RCEC or project) would conform with applicable federal, state and Bay Area Air Quality Management District (BAAQMD or District) air quality laws, ordinances, regulations and standards (LORS), and that the modified RCEC would not result in significant air quality-related impacts.

INTRODUCTION

The RCEC project was certified by the Energy Commission in September 2002, and received an amended approval by the Energy Commission in October 2007. The RCEC project was certified as a nominal 600 megawatts (MW) natural gas-fired, combined cycle electric generating facility located in Hayward, California. The Energy Commission approved two petitions to extend commencement of the construction deadline on August 29, 2007 and on July 30, 2008, respectively. On August 11, 2010, the Energy Commission approved Amendment No. 2, which made modifications to the Air Quality conditions of certification to conform with the project's federal Prevention of Significant Deterioration (PSD) permit and enable the renewal of the Authority to Construct (ATC) issued by the Bay Area Air Quality Management District (BAAQMD or District). Construction of RCEC began in September 2010.

On November 8, 2012, the Russell City Energy Company, LLC (project owner) filed amendment request No. 4 (RCEC 2012) with the Energy Commission to extend the timing for conducting initial source testing and to make certain non-substantive clarifications and administrative amendments to provisions governing monitoring and initial source testing and to conform with the ATC issued by BAAQMD. Details are provided in the staff analysis.

On March 20, 2013, the project owner filed an addendum to the amendment request No. 4 (RCEC 2013) to change the emission reduction credits (ERCs) obligation in Condition of Certification **AQ-SC12** to correct an oversight and to ensure consistency with **AQ-23**.

The project owner also requests to modify **VIS-2** for onsite landscaping, delete **VIS-9** for trailside improvements, modify **VIS-10** to provide alternative offsite visual enhancement measures, and change **HAZ-5** regarding the location of storage of combustible or flammable materials. These modifications will not have an impact on Air Quality thus will

not be analyzed in this section. This analysis focuses upon the air quality issues in amendment No. 4 and addendum.

LAWS, ORDINANCES, REGULATION, AND STANDARDS (LORS) COMPLIANCE

The 2002 Decision (CEC 2002b), 2007 Amended Decision (CEC 2007b) and 2010 Amended Decision (CEC 2010d) certifying the RCEC concluded that the project complied with all applicable LORS. The District reconsidered the applicability of the following standards to RCEC in their Analysis of Requested Change of Conditions (BAAQMD 2013) for the current amendment No. 4 and addendum.

40 CFR PART 60 SUBPART KKKK

In the 2007 Amended Final Determination of Compliance (FDOC) for the project (BAAQMD 2007), the District stated that the gas turbines were subject to 40 CFR Part 60 Subpart GG "Standards of Performance for Stationary Gas Turbines" and the heat recovery steam generators (HRSGs) were subject to 40 CFR Part 60 Subpart Da "Standards of Performance for Electric Utility Steam Generating Units for which Construction is Commenced after September 18, 1978".

On July 6, 2006, the U.S. EPA promulgated revised new source performance standards (NSPS) for stationary combustion turbines (40 CFR Part 60 Subpart KKKK) applicable to stationary combustion turbines on which construction, modification or reconstruction is commenced after February 18, 2005. The new standards in Subpart KKKK reflect advances in turbine design and nitrogen oxide (NOx) emission control technologies since the standards for these units were originally promulgated in 1979 in Subpart GG of 40 CFR Part 60. The new standards also require the use of lower sulfur fuels.

The District reviewed the U.S. EPA applicability determination index from other projects and determined the RCEC facility is subject to 40 CFR Part 60 Subpart KKKK, not Subpart GG or Subpart Da (BAAQMD 2013). Subpart KKKK emission limitation is more stringent than those in Subpart Da and Subpart GG. The NOx emission limitation was 1.6 pounds of NOx per megawatt-hour (lb NOx/MWh) in Subpart Da and lowered to 0.43 NOx/MWh in Subpart KKKK. The NOx limitation in Subpart GG was 100 parts per million, volumetric dry (ppmvd) NOx, @ 15% oxygen (O_2) and it was lowered to 15 ppm NOx as NO_2 @ 15% O_2.

Air Quality Table 1 shows the emission limitations in Subparts KKKK from BAAQMD analysis of current amendment request (BAAQMD 2013).

Air Quality Table 1
Emission Limitations in 40 CFR Part 60 Subpart KKKK Applicable to RCEC

Source	Requirement	Emission Limitation
Gas Turbines	Subpart KKKK §60.4320 (NOx) §60.4330(sulfur dioxide - SO_2)	0.43 lb NOx/MW-hr, or 15 ppm NOx as NO_2 @ 15%O_2; 0.9 lb SO_2/MW-hr, or 0.06 lb SO_2/MMBtu maximum No carbon monoxide (CO) limit in Subpart KKKK No particulate matter (PM) limit in Subpart KKKK

The following sections of Subpart KKKK also apply to RCEC:

Section 60.4340(b)(1) requires continuous emissions monitors for NOx with NOx initial and annual performance tests complying with Section 60.4405 relative accuracy test audit (RATA) testing.

Section 60.4365(a) exempts the facility from SO_2 monitoring by requiring a contract for natural gas with 20 grains of sulfur or less per 100 standard cubic feet. The facility will use Public Utility Commission (PUC) regulated natural gas and be conditioned to use natural gas with 1 grain of sulfur or less per 100 standard cubic feet (PG&E Gas Rule 21 Section C).

Section 60.4375 requires submittal of reports of excess emissions and monitoring of downtime for all periods of unit operation, including startup, shutdown, and malfunction.

40 CFR PART 63 SUBPART ZZZZ

In the 2007 Amended FDOC (BAAQMD 2007), the District stated that the fire pump engine was subject to the New Source Performance Standard for Compression Ignition Internal Combustion Engines (40 CFR 60 Subpart IIII). The District has now determined that the fire pump engine is also subject to 40 CFR Part 63 Subpart ZZZZ “National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines” (BAAQMD 2013). This subpart was inadvertently left out of the 2007 Amended FDOC (BAAQMD 2007). Per Section 63.6590(c), the fire pump diesel engine will meet the requirements of this subpart by meeting the requirements of 40 CFR Part 60 Subpart IIII.

SETTING

Since the 2010 staff analyses (CEC 2010a, CEC 2010b) of the proposed changes in Amendment No. 2, the area's attainment status for federal short-term NO_2 Ambient Air

Quality Standard (AAQS) has changed. On February 17, 2012, U.S. EPA designated all of California as "unclassifiable/attainment" for the federal short-term NO_2 standard. **Air Quality Table 2** summarizes the current attainment status of the BAAQMD for various applicable state and federal Ambient Air Quality Standards. These changes do not affect the analysis and conclusions herein but are provided to depict the current setting.

Air Quality Table 2
BAAQMD Attainment Status

Pollutants	Attainment Status	
	Federal	State
Ozone	Nonattainment	Nonattainment
CO	Attainment	Attainment
NO_2	Unclassifiable/Attainment	Attainment
SO_2	Attainment	Attainment
PM10	Unclassified	Nonattainment
PM2.5	Nonattainment	Nonattainment

Source: ARB 2011, US EPA 2012

ANALYSIS

EXTEND THE TIMING FOR CONDUCTING INITIAL SOURCE TESTING

The project owner expects that they may not be able to complete the initial compliance tests within 90 days (or 60 days in **AQ-45**) of first fire of the gas turbines. The project owner submitted the amendment request to allow for an additional 30 days (or 60 days in **AQ-45**) to conduct the initial compliance test (up to 120 days from first fire of each gas turbine) in conditions of certification **AQ-11**, **AQ-29**, **AQ-30**, **AQ-32**, **AQ-34**, and **AQ-45**.

The project owner did not expect there to be a need for additional time (beyond 90 days) to prepare for the initial source testing until the sequencing of the commissioning process was established by the construction contractor. The commissioning of two gas turbine/heat recovery steam generator trains and the associated steam turbine is a complex series of events and the request for an additional 30 days to conduct the compliance test appears to be reasonable. The requested change would provide RCEC sufficient time to finish activities necessary to prepare for an accurate, full-load source test and would not extend the actual commissioning period.

There would be no increase in permitted emissions associated with this change of conditions request. In accordance with **AQ-9**, all emissions during the commissioning period shall accrue towards the consecutive twelve-month emission limitations specified in **AQ-23**. Daily emissions during commissioning are limited by **AQ-10** and are not being changed. Worst case hourly NO_x and CO emissions during commissioning are also limited by **AQ-10** and are not being changed. The commissioning hours of each gas

turbine and HRSG train are limited to 300 hours in **AQ-7** and **AQ-8** and are not being changed. All the commissioning emission limits remain the same.

The District proposes to revise the submission date for the initial source test reports to be within 150 days of the initial startup in **AQ-11**, **AQ-29**, **AQ-30**, **AQ-31**, and **AQ-34** to ensure that the District will still have time to approve or disapprove the permit to operate within 180 days of the startup of the project. Staff also recommends corresponding update in the verifications of **AQ-32** and **AQ-33**.

CHANGES TO AQ-SC12 AND AQ-SC13

The 2002 Decision (CEC 2002b) required the project owner to mitigate for the quantity of PM10 emissions generated by the project during the fall and winter quarters when the area experiences violation of the PM10 standards, through a fireplace retrofit/woodstove replacement program. Since this is half of the year, staff proposed that the project owner mitigate the impacts of 43.21 tons per year (tpy), half the project's total annual emissions of 86.42 tpy estimated in the Final Staff Assessment **(CEC 2002a)** and incorporated into the 2002 Decision ~~(CEC 2002a)~~.

The annual PM10 emission limits were later revised in the 2007 Amended Decision (CEC 2007b) to 86.8 tpy, thus the emission reduction obligation for the fireplace retrofit/woodstove replacement program became 43.4 tpy (half of 86.8 tpy). Staff recommended several milestones in **AQ-SC12** for the project owner to gradually implement the fireplace retrofit/woodstove replacement program. If complete compliance with **AQ-SC12** cannot be achieved by the condition milestones, **AQ-SC13** in 2007 Amended Decision allowed the project owner to make up the wintertime PM10 milestone shortfall by providing annual PM10 or PM10 equivalent (SOx for PM10) ERCs at a ratio of 2 tons of annual PM10 or PM10 equivalent ERCs to 1 ton of wintertime PM10. PM10 equivalent ERCs can be provided by SOx-for-PM10 interpollutant trading at a ratio of 5.3 to 1.

On February 3, 2010, BAAQMD issued the federal PSD permit (BAAQMD 2010). The PSD permit provides a new Best Available Control Technology (BACT) analysis that requires lower project emission limits. On August 11, 2010, the Energy Commission approved Amendment No. 2, which modified the Air Quality conditions to conform with the federal PSD permit and enabled the renewal of the ATC issued by BAAQMD. Among those changes, **AQ-23** was amended to be consistent with the lowered emission limits from the project's gas turbines, HRSGs, cooling tower, and fire pump diesel engine. The annual PM10 emission limit was reduced from 86.8 tons to 71.8 tons. However, when **AQ-23** was updated, ~~in an administrative error~~ the 50 percent ERC obligation in **AQ-SC12** was not updated correspondingly **because of an oversight**. In the addendum to the current amendment request No. 4 (RCEC 2013), RCEC requests corrections be made in **AQ-SC12** to reduce the PM10 ERC requirement of the fireplace retrofit/woodstove replacement program from 43.4 tpy to 35.9 tpy, which is 50 percent of the currently-approved annual PM10 limit of 71.8 tpy in **AQ-23**.

On May 14, 2010, the project compliance manager at RCEC sent a notification to the Energy Commission Compliance Project Manager (CPM) stating RCEC would be unable to meet the milestones of the fireplace retrofit/woodstove replacement program as described in **AQ-SC12**. In accordance with **AQ-SC13**, RCEC would surrender 71.8 tons of PM10 or PM10 equivalent ERCs at least 60 days prior to initial startup (RCEC 2010a). Energy Commission staff reviewed and approved the letter on July 12, 2010 (CEC 2010c).

Staff believes **AQ-SC12** is obsolete because of the unsuccessful fireplace retrofit/woodstove replacement program. RCEC is going to comply with **AQ-SC13** for 100 percent of the ERCs in lieu of **AQ-SC12**. RCEC requested the changes in **AQ-SC12** because **AQ-SC13** requires "annual PM10 or PM10 equivalent (SOx for PM10) ERCs at a ratio of 2 tons of annual PM10 or PM10 equivalent ERCs to 1 ton of wintertime PM10", while the quantity of wintertime PM10 ERCs is specified in **AQ-SC12**, which was not updated. In order to avoid future confusion, staff recommends deleting **AQ-SC12** and specifying the quantity of PM10 ERCs explicitly in **AQ-SC13** instead of referring to **AQ-SC12**.

On July 15, 2010, the project owner sent a letter to Energy Commission which identified the ERCs to be surrendered to the District at least 60 days prior to initial startup (RCEC 2010b). Based on the latest conversation between staff and project owner, the project owner will make sure the ERCs are surrendered prior to initial startup. Staff believes the verification of **AQ-SC13** causes confusion about whether the project owner should submit the list of ERCs 60 days prior to initial startup or surrender the ERCs 60 days prior to initial startup. Since the list of ERCs were already provided in 2010 and staff has already reviewed the list, staff believes "at least 60 days" should be deleted in the verification of **AQ-SC13**.

OTHER ADMINISTRATIVE CHANGES

The project owner also requested other administrative changes that are minor and non-substantive and would not modify any currently licensed limits on emissions. The District believes some of the changes are not necessary and resolved the issue with the project owner. Staff also suggests some minor changes in the conditions of certification to resolve some inconsistencies between prior Energy Commission Decisions and the District's documents. These changes are summarized as follows:

1. The project owner requested to correct the word "and" to "through" between **AQ-19(b)** and **AQ-19(d)** in the definition for Gas Turbine Shutdown Mode. Staff confirms that **AQ-19(c)** also applies in this definition thus "and" was a typographical error. This change will make it consistent with the PSD permit.

2. The project owner requested to remove the last sentence from the gas turbine combustor tuning mode definition. This sentence stated, "The [selective catalytic reduction] SCR and oxidation catalyst are not operating during the tuning operation." This sentence needs to be deleted since the oxidation catalyst will partially abate emissions of volatile organic compounds (VOC) and CO depending on the

temperature. The SCR is required to comply with Conditions of Certification **AQ-17** and **AQ-18** once it reaches minimum temperature.

3. The District proposes to delete the phrase "using certified continuous emissions monitors" in the first sentence of **AQ-11** for source tests because the phrase is confusing since the initial source test to demonstrate compliance with **AQ-19** will require more than the use of certified continuous emissions monitors. Staff agrees with this change.

4. The project owner proposes to add "rolling 12-month annual" in the fourth sentence of **AQ-12** to specify the duration that the average sulfur content needs to be calculated. Staff confirms that this phrase was left out inadvertently in the 2007 Amended Decision.

5. The project owner also requested a change to **AQ-19(a)** to add the phrase, "averaged over any 1-hour period" after the NO**x**~~x~~ lb/MMBtu emission limits. The District confirms that the lb/MMBtu limits were not intended to be instantaneous limits and this makes the NOx limits in **AQ-19(a)** consistent with CO limits in **AQ-19(c)**. Staff agrees with this change.

6. Staff found a typographical error in **AQ-19(e)** of 2010 Amended Decision that referenced "condition 30" for the ammonia source test, which should be corrected to "**AQ-29**".

7. **AQ-19(e)** requires continuous recording of the ammonia inject**ion** rate in order to verify the ammonia emission rate. The correlation between the heat input rates, ammonia injection rates, and corresponding ammonia emission concentration is required to be determined in accordance with source test results from **AQ-29**. The 2007 Amended FDOC provided an option for the project owner to use a District-approved alternative method in addition to **AQ-29**. This option was omitted from the 2007 Amended Decision. In the current amendment request, the project owner proposed to replace the requirement of recording the ammonia inject rate and calculating the ammonia emission rate based on **AQ-29** with the use of a District-approved calculation. The District worked with the project owner to develop a method to properly determine the ammonia slip concentration emission limit of 5 ppmv. Staff believes that, when District approves the alternative method in the future, the results would be equivalent.

8. The project owner suggested to add the phrase "or shutdown" after "startup" in the first sentence of **AQ-20**. Staff confirms that **AQ-20** includes emission limits for both startup and shutdown. The phrase "or shutdown" was apparently inadvertently left out in the previous Energy Commission decisions and it should be added to **AQ-20**.

9. The project owner requested to remove the phrase "and the auxiliary boiler" at the end of **AQ-26(j)**, which requires calculating and recording "the average hourly heat input rates, corrected NO**x**~~x~~ emission concentration, NO**x**~~x~~ mass emission rate (as

NO_2), corrected CO emission concentration, and CO mass emission rate for each gas turbine and associated HRSG combined and the auxiliary boiler." In the Final Staff Assessment of Amendment No. 1 (CEC 2007a), staff suggested installing an auxiliary boiler as an alternative technology to shorten startup durations and reduce startup emissions. Neither the 2007 Amended FDOC nor the PSD permit included the auxiliary boiler. The auxiliary boiler was never built and staff recommends deleting the phrase "and the auxiliary boiler" to keep the condition current.

10. The project owner proposes to correct "**AQ-22(c) thru (e)**" to "**AQ-22(d) thru (f)**" for POC, PM10 and SO_2 daily emission limits in the first sentence of **AQ-27** because it was a typographical error. The District proposes to replace the word "thru" in three places in **AQ-27** with the specific conditions that "thru" stands for to make it more explicit. Staff agrees.

11. Staff found a typographical error in **AQ-27(b)** of 2007 Amended Decision that required emission calculations for "eight" sources, which should be corrected to "four" sources.

12. The project owner requested a change to **AQ-30** to clarify the source testing requirements for maximum and minimum load operation. The District confirms that the phrase "For the purposes of the testing at maximum load only," needs to be added to the second sentence to clarify that the minimum test requirements listed were intended for maximum load only. The facility will still be required to conduct source testing at minimum load to demonstrate compliance with CO limits contained in **AQ-19(c)** and **AQ-19(d)**. Staff agrees.

13. The District proposes to correct a typographical error in **AQ-33** that referenced **AQ-30** for the sulfuric acid emissions (SAM) testing, which should be **AQ-34**. Staff agrees.

14. The project owner requested a change to **AQ-34** to clarify the frequency of the SAM testing would be annual instead of semi-annual (twice per year). Staff found annual testing was required in the 2007 Amended Final Determination of Compliance (FDOC) (BAAQMD 2007) and the PSD permit (BAAQMD 2010) but semi-annual testing was required in the 2007 Amended Decision (CEC 2007b). In addition, the 2007 Amended Decision included the sentence "After acquiring one year of source test data on these sources, the owner/operator may petition the District to reduce the test frequency to an annual basis if test result variability is sufficiently low as determined by the District." This sentence did not exist in the 2007 Amended FDOC or the PSD permit. The District staff believes that semi-annual testing is not necessary and proposes to delete the above sentence because the facility may always submit a permit application to revise source test frequency based on actual source test results. Staff recommends updating **AQ-34** as shown below to make it consistent with the 2007 Amended FDOC and the PSD permit.

15. The District proposes to delete “S-5, or S-7” and “S-6, or S-8” in the last sentence of **AQ-42** because these were typographical errors. The District proposes to add “or” after “S-1” and after “S-2”. Staff agrees.

16. The District also proposes to change “project owner” to “owner/operator” in **AQ-10**, **AQ-19**, **AQ-20**, **AQ-22**, **AQ-23**, **AQ-26**, and **AQ-44** to be consistent with other conditions. Staff agrees.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

Staff received comments from Hayward Area Recreation and Park District (HARD), City of Hayward, and League of Women Voters of the Eden Area (LWVEA) regarding the current amendment request and notice of receipt. Summaries of the air quality comments with specific responses are provided below, and also are reflected in the analysis above.

LWVEA comments:

Comment
Air Quality standards should be strictly enforced given Calpine’s insistence on constructing this major stationary source of pollution in a non-attainment region that already suffers from too much pollution and is already overbuilt.

Staff Response
Staff agrees that the ambient air quality standards should be enforced and will be continuously enforced through compliance programs of U.S. EPA, BAAQMD, and Energy Commission.

Comments
Given these circumstances, adding another month, resulting in four months of unregulated emissions is one month too many of too much pollution.

Staff report needs to explore and discuss: “How much” unregulated emissions will be emitted during the 3 month allowed testing time and how much more is anticipated to be emitted during the additional one month requested time?

Additionally, why is additional time needed for testing when Capine actively represented (contrary to industry commentators) that the licensed conditions are achievable, such as the emission rate for PM2.5?

Staff Response
Staff notes that the commissioning emissions are not unregulated or unlimited. As mentioned in the text, RCEC requests more time to prepare for and conduct the initial source test, not to increase actual commissioning emissions. Additional time is required because of the sequencing of the activities established by the construction and source testing contractors.

There would be no emissions increase in permitted emissions associated with this change of conditions request. In accordance with Condition of Certification **AQ-9**, all emissions during the commissioning period shall accrue towards the consecutive twelve-month emission limitations specified in **AQ-23**. Daily emissions during commissioning are also limited by **AQ-10** and are not being changed. Worst case hourly NOx and CO emissions during commissioning are also limited by **AQ-10** and are not being changed. The commissioning hours of each gas turbine and heat recovery steam generator (HRSG) train are limited to 300 hours in **AQ-7** and **AQ-8** and are not being changed. All the commissioning emission limits remain the same.

Comment
It is unclear as to when would testing be performed, such as would testing occur during the active fall or spring semesters when the schools' outdoor sports programs are most active or during summer youth camps?

Staff Response
Most recent conversation between RCEC and staff indicated that RCEC plans to conduct first fire around May 8. The current planned commercial operation date is June 28. Thus the commissioning is expected to occur during May or June if everything goes well. Again, commissioning emissions have been analyzed by staff with respect to ambient air quality standards, and staff does not expect emissions to cause any violations of these standards.

Comment
Will testing result in noxious fumes be emitted resulting in foul smells and if so, at what distance and levels?

Staff Response
No, noxious fumes emitted from natural gas power plants during commission or operation would be negligible. In order to help detect leaks, a small amount of odorant is added to the otherwise colorless and almost odorless natural gas. Once it's combusted, the odorant would be oxidized and become odorless. Natural gas combustion is generally cleaner than coal and diesel combustion.

The BAAQMD Regulation 7-302 prohibits the discharge of odorous substances which remain odorous beyond the facility property line after dilution with four parts of odor-free air. Regulation 7-302 limits ammonia emissions to 5000 ppm. Because the ammonia slip emissions from the proposed CTG/HRSG power trains will each be limited by permit condition to 5 ppmvd @ 15% O_2, the facility is expected to comply with the requirements of Regulation 7. Staff does not expect to receive any odor complaints from a power plant like RCEC.

Comment
Will concentration levels of pollutants be such that athletic coaches or instructors of summer camps should be forewarned from conducting outdoor athletic activities?

Staff Response
No, the analyses performed by the Energy Commission and BAAQMD ensure that emissions are limited and the project will not cause violations of ambient air quality standards during commissioning or normal operations, day in and day out, for the life of the project. Typically, the commissioning activities occur before the installation of the emission control equipment, e.g., selective catalytic reduction (SCR) and oxidation catalyst, while the turbines are being tuned to achieve optimum performance. During initial source testing, the emission control equipment would already be installed and effective. The purpose of initial source testing is to ensure compliance with the emission limitations specified in the air permits during all operating scenarios.

The impacts during both commissioning and operations were analyzed for the original application for certification and previous amendments. The impacts were compared with National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS). These standards provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. The previous analyses concluded that the project would not cause any new violations of NO_2, CO or SO_2 air quality standards but would contribute to existing violations of the state 24-hour and annual PM10 standards, the state annual PM2.5 standard, and the state 1-hour and the federal 8-hour ozone standards. Mitigation measures as specified in the permits would mitigate these potential impacts to a level that was determined to be less than significant.

Staff believes the project impacts alone would not cause the violation of the ambient air quality standards.

Comment
An explanation as to why Calpine seeks to substitute a more accurate means of measurement for the ammonia slip for a less accurate means under AQ-19(e)?

Staff Response
Staff is not aware that the proposed changes are a more or less accurate measurement methodology than the existing condition's requirement. The District worked with the project owner to develop a method to properly determine the ammonia slip concentration emission limit of 5 ppmv. The District approved alternative method option was included in the 2007 Amended FDOC but was left out in the 2007 Amended Decision. Staff believes when District approves the alternative method, which is very similar in method to the current condition's requirements, the measured results would be equivalent.

CONCLUSIONS AND RECOMMENDATIONS

The requested changes in the conditions of certification identified below would conform with applicable federal, state, and BAAQMD air quality laws, ordinances, regulations, and standards. The amended project is expected to comply with 40 CFR Part 60 Subpart KKKK and 40 CFR Part 63 Subpart ZZZZ (BAAQMD 2013). The amended

project would not cause significant air quality impacts, provided that the following conditions of certification are included. Staff recommends that the revised conditions of certification be approved as shown below.

PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION

Below is a list of those conditions of certification that must be revised from those in effect as of the 2007 Amended Decision (CEC 2007b) and 2010 Amended Decision (CEC 2010d). These changes make the conditions of certification consistent with current BAAQMD permit requirements. ~~Strikethrough~~ is used to indicate deleted language and **underline and bold** is used for new language.

Summary of revised conditions of certification:

- Delete **AQ-SC12** and replace with "[Reserved]".
- Revise **AQ-SC13** to specify the required quantity of of PM10 ERCs.
- Delete "at least 60 days" in the verification of **AQ-SC13**.
- Gas Turbine Shutdown Mode definition: correct "and" to "through" between **AQ-19(b)** and **AQ-19(d)**.
- Combustor Tuning Mode definition: delete last sentence, "The SCR and oxidation catalyst are not operating during the tuning operation."
- Change "project owner" to "owner/operator" in **AQ-10**, **AQ-19**, **AQ-20**, **AQ-22**, **AQ-23**, **AQ-26**, and **AQ-44**.
- Extend the timing for conducting initial source testing from "90" days (or "60" days in **AQ-45**) to "120" days after startup in **AQ-11**, **AQ-29**, **AQ-30**, **AQ-32**, **AQ-34**, and **AQ-45**.
- Change the date that the initial source test reports are required to be submitted to be within "150 days of the initial startup" in **AQ-11**, **AQ-29**, **AQ-30**, **AQ-31**, verifications of **AQ-32** and **AQ-33**, and **AQ-34**.
- Delete "using certified continuous emissions monitors" in the first sentence of **AQ-11**.
- Add "rolling 12-month annual" in the fourth sentence of **AQ-12**.
- Add "averaged over any 1-hour period" after the NO**x**~~x~~ lb/MMBtu emission limits in the first and second sentences of **AQ-19(a)**.

- Replace “30” with “**AQ-29**” at the end of **AQ-19(e)**.

- Add “or District approved alternative method” at the end of **AQ-19(e)**.

- Add “or shutdown” after “startup” in the first sentence of **AQ-20**.

- Delete “and the auxiliary boiler” at the end of **AQ-26(j)**.

- Replace “thru” in three places in **AQ-27** with the specific conditions that “thru” stands for**,** ~~and~~ replace **AQ-22(c)** with **AQ-22(d)**, **and add AQ-22(f)**.

- Replace “eight” with “four” in **AQ-27(b)**.

- Add “For the purposes of the testing at maximum load only” at the beginning of the second sentence of **AQ-30**.

- Replace “**AQ-30**” with “**AQ-34**” in the first sentence of **AQ-33**.

- Replace “semi-annual” with “annual” and delete “(twice per year)” in the first sentence of **AQ-34** and delete the third sentence, “After acquiring one year of source test data on these sources, the owner/operator may petition the District to reduce the test frequency to an annual basis if test result variability is sufficiently low as determined by the District.”, in **AQ-34**.

- Delete “S-5, or S-7”, “S-6 or S-8”, and add “or” after “S-1” and after “S-2” in the last sentence of **AQ-42**.

CONDITIONS OF CERTIFICATION

AQ-SC12 [Reserved]

~~A fireplace retrofit/woodstove replacement program shall be made available to all Hayward residents on a first-come, first-serve basis to finance a voluntary woodstove replacement/fireplace retrofit. The program can also made available to all residents of the cities of Fremont, Newark, Union City, San Leandro, Oakland, Emeryville, Albany, Piedmont, Berkeley, Alameda and the unincorporated communities of San Lorenzo and Castro Valley after twelve (12) months from the start date of the fireplace retrofit/woodstove replacement program. The program shall provide a minimum of 43.4 tons of winter-time (Oct 1 to Mar 31) PM10 ERCs per year. Each resident participating in the retrofit/replacement program would agree to replace their existing woodstove or fireplace with a natural gasfired unit, or to permanently close the fireplace or woodstove chimney and apply the rebate toward the improvement or replacement of their homes' existing central heating and air conditioning unit. Quarterly status reports on the program meeting the following milestones shall be submitted to the CPM:~~

~~a. achieving 6.5 tons per year of winter-time PM10 six (6) months after start of construction,~~
~~b. achieving 13.0 tons per year of winter-time PM10 nine (9) months after start of construction.~~
~~c. achieving 21.7 tons per year of winter-time PM10 twelve (12) months after start of construction.~~
~~d. achieving 34.7 tons per year of winter-time PM10 eighteen (18) months after start of construction.~~
~~e. achieving 43.4 tons per year of winter-time PM10 twenty four (24) months after start of construction.~~

~~**Verification:** At least ninety (90) days before start of construction, the project owner shall submit to the CPM a plan detailing the fireplace/woodstove replacement program for approval. The plan shall include, at the minimum, the description of the program, the amount of rebate, the person (or agency) who oversees the program implementation, the responsible person who reports to the CPM on the progress of the program implementation, the target milestones, and procedures to be followed if the target milestones have not been met. The project owner shall submit documentation to show compliance with this condition in the quarterly and annual reports as required in **AQ-20**.~~

AQ-SC13 ~~If complete compliance with **AQ-SC12** cannot be achieved by the condition milestones, t~~**T**he project owner shall **provide 71.8 TPY of PM10 ERCs required, either as PM10 or SOx ERCs.** ~~make up the wintertime PM10 milestone shortfall by providing annual PM10 or PM10 equivalent (SOx for PM10) ERCs at a ratio of 2 tons of annual PM10 or PM10 equivalent ERCs to 1 ton of wintertime PM10.~~ PM10 equivalent ERCs can be provided by SOx for PM10 interpollutant trading at a ratio of 5.3 to 1.

Verification: The project owner shall submit to the CPM a list of PM10 and/or SOx ERCs to be surrendered to the District ~~at least 60 days~~ prior to initial startup.

AIR DISTRICT CONDITIONS OF CERTIFICATION

Definitions:

Clock Hour:	Any continuous 60-minute period beginning on the hour.
Calendar Day:	Any continuous 24-hour period beginning at 12:00 AM or 0000 hours.
Year:	Any consecutive twelve-month period of time.
Heat Input:	Heat inputs refer to the heat input at the higher heating value (HHV) of the fuel, in BTU/scf.
Firing Hours:	Period of time during which fuel is flowing to a unit, measured in minutes.
MM BTU:	Million British thermal units.

Gas Turbine Warm and Hot Start-up Mode:	The lesser of the first 180 minutes of continuous fuel flow to the gas turbine after fuel flow is initiated or the period of time from gas turbine fuel flow initiation until the gas turbine achieves two consecutive CEM data points in compliance with the emission concentration limits of Conditions of Certification **AQ-19(b)** and **AQ-19(d)**.
Gas Turbine Cold Start-up Mode:	The lesser of the first 360 minutes of continuous fuel flow to the gas turbine after fuel flow is initiated or the period of time from gas turbine fuel flow initiation until the gas turbine achieves two consecutive CEM data points in compliance with the emission concentration limits of Conditions of Certification **AQ-19(b)** and **AQ-19(d)**.
Gas Turbine Shutdown Mode:	The lesser of the 30 minute period immediately prior to the termination of fuel flow to the gas turbine or the period of time from non-compliance with any requirement listed in Conditions of Certification **AQ-19(b)** ~~**and**~~ **<u>through</u> AQ-19(d)** until termination of fuel flow to the gas turbine.
Gas Turbine Combustor Tuning Mode:	The period of time, not to exceed 360 minutes, in which testing, adjustment, tuning, and calibration operations are performed, as recommended by the gas turbine manufacturer, to insure safe and reliable steady-state operation, and to minimize NO_x and CO emissions. ~~The SCR and oxidation catalyst are not operating during the tuning operation.~~
Gas Turbine Cold Start-up:	A gas turbine start-up that occurs more than 48 hours after a gas turbine shutdown.
Gas Turbine Hot Start-up:	A gas turbine start-up that occurs within 8 hours of a gas turbine shutdown.
Gas Turbine Warm Start-up:	A gas turbine start-up that occurs between 8 hours and 48 hours of a gas turbine shutdown.
Specified PAHs:	The polycyclic aromatic hydrocarbons listed below shall be considered to be Specified PAHs for these permit conditions. Any emission limits for Specified PAHs refer to the sum of the emissions for all six of the following compounds: Benzo[a]anthracene Benzo[b]fluoranthene Benzo[k]fluoranthene Benzo[a]pyrene Dibenzo[a,h]anthracene

Indeno[1,2,3-cd]pyrene

Corrected Concentration:	The concentration of any pollutant (generally NO_x, CO, or NH_3) corrected to a standard stack gas oxygen concentration. For emission points P-1 (combined exhaust of S-1 gas turbine and S-3 HRSG duct burners), P-2 (combined exhaust of S-2 gas turbine and S-4 HRSG duct burners), the standard stack gas oxygen concentration is 15% O_2 by volume on a dry basis.
Commissioning Activities:	All testing, adjustment, tuning, and calibration activities recommended by the equipment manufacturers and the RCEC construction contractor to insure safe and reliable steady state operation of the gas turbines, heat recovery steam generators, steam turbine, and associated electrical delivery systems during the commissioning period.
Commissioning Period:	The Period shall commence when all mechanical, electrical, and control systems are installed and individual system start-up has been completed, or when a gas turbine is first fired, whichever occurs first. The period shall terminate when the plant has completed performance testing, is available for commercial operation, and has initiated sales to the power exchange.
Precursor Organic Compounds (POCs):	Any compound of carbon, excluding methane, ethane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate.
CPM:	California Energy Commission Compliance Program Manager
RCEC:	Russell City Energy Center

CONDITIONS FOR COMMISSIONING PERIOD

AQ-10 The ~~project~~ owner**/operator** shall not operate the gas turbines (S-1 & S-3) and HRSGs (S-2 & S-4) in a manner such that the combined pollutant emissions from these sources will exceed the following limits during the commissioning period. These emission limits shall include emissions resulting from the start-up and shutdown of the gas turbines (S-1 & S-3).

NO_x (as NO_2)	4,805 pounds per calendar day	400 pounds per hour
CO	20,000 pounds per calendar day	5,000 pounds per hour
POC (as CH_4)	495 pounds per calendar day	
PM10	413 pounds per calendar day	
SO_2	298 pounds per calendar day	

Verification: The project owner shall submit a MCR to the CPM specifying how this condition is being complied with.

AQ-11 No less than **120**~~90~~ days after startup, the owner/operator shall conduct District and Energy Commission approved source tests ~~using certified continuous emissions monitors~~ to determine compliance with the emission limitations specified in **AQ-19**. The source tests shall determine NO_x, CO, and POC emissions during start-up and shutdown of the gas turbines. The POC emissions shall be analyzed for methane and ethane to account for the presence of unburned natural gas. The source test shall include a minimum of three start-up and three shutdown periods and shall include at least one cold start, one warm start, and one hot start. Twenty (20) working days before the execution of the source tests, the owner/operator shall submit to the District and the CPM a detailed source test plan designed to satisfy the requirements of this condition. The District and the CPM will notify the owner/operator of any necessary modifications to the plan within 20 working days of receipt of the plan; otherwise, the plan shall be deemed approved. The owner/operator shall incorporate the District and CPM comments into the test plan. The owner/operator shall notify the District and the CPM within seven (7) working days prior to the planned source testing date. The owner/operator shall submit the source test results to the District and the CPM within **150 days of the initial startup**~~60 days of the source testing date~~.

Verification: No later than 30 working days before the commencement of the source tests, the project owner shall submit to the District and the CPM a detailed source test plan designed to satisfy the requirements of this condition. The District and the CPM will notify the project owner of any necessary modifications to the plan within 20 working days of receipt of the plan; otherwise, the plan shall be deemed approved. The project owner shall incorporate the District and CPM comments into the test plan. The project owner shall notify the District and the CPM within seven (7) working days prior to the planned source testing date. Source test results shall be submitted to the District and the CPM within **150 days of the initial startup**~~60 days of the source testing date~~.

CONDITIONS FOR THE GAS TURBINES (S-1 & S-3) AND THE HRSGS (S-2 & S-4)

AQ-12 The owner/operator shall fire the gas turbines (S-1 & S-3) and HRSG Duct Burners (S-2 & S-4) exclusively on PUC-regulated natural gas with a maximum sulfur content of 1 grain per 100 standard cubic feet. To demonstrate compliance with this limit, the operator of S-1 through S-4 shall sample and analyze the gas from each supply source at least monthly to determine the sulfur content of the gas. PG&E monthly sulfur data may be used provided that such data can be demonstrated to be representative of the gas delivered to the RCEC. In the event that the **rolling 12-month annual** average sulfur content exceeds 0.25 grain per 100 standard cubic feet, a reduced annual heat input rate may be utilized to calculate the maximum projected annual emissions. The reduced annual heat

input rate shall be subject to District review and approval. (BACT for SO2 and PM10)

Verification: The project owner shall complete, on a monthly basis, a laboratory analysis showing the sulfur content of natural gas being burned at the facility.
The sulfur analysis reports shall be incorporated into the quarterly compliance reports.

AQ-19 The ~~project~~ owner**/operator** shall ensure that the gas turbines (S-1 & S-3) and HRSGs (S-2 & S-4) comply with requirements **(a) through (h)** under all operating scenarios, including duct burner firing mode. Requirements **(a) through (h)** do not apply during a gas turbine start-up, combustor tuning operation or shutdown. (BACT, PSD, and Regulation 2, Rule 5)

(a) Nitrogen oxide mass emissions (calculated as NO_2) at P-1 (the combined exhaust point for S-1 gas turbine and S-2 HRSG after abatement by A-1 SCR System) shall not exceed 16.5 pounds per hour or 0.00735 lb/MM BTU (HHV) of natural gas fired**, averaged over any 1-hour period**. Nitrogen oxide mass emissions (calculated as NO_2) at P-2 (the combined exhaust point for S-3 gas turbine and S-4 HRSG after abatement by A-3 SCR System) shall not exceed 16.5 pounds per hour or 0.00735 lb/MM BTU (HHV) of natural gas fired**, averaged over any 1-hour period**.

(b) The nitrogen oxide emission concentration at emission points P-1 and P-2 each shall not exceed 2.0 ppmv, on a dry basis, corrected to 15 percent O_2, averaged over any 1-hour period. (BACT for NO_x)

(c) Carbon monoxide mass emissions at P-1 and P-2 each shall not exceed 10 pounds per hour or 0.0045 lb/MM BTU of natural gas fired, averaged over any 1-hour period. (PSD for CO)

(d) The carbon monoxide emission concentration at P-1 and P-2 each shall not exceed 2.0 ppmv, on a dry basis, corrected to 15 percent O_2, averaged over any 1-hour period. (BACT for CO)

(e) Ammonia (NH_3) emission concentrations at P-1 and P-2 each shall not exceed 5 ppmv, on a dry basis, corrected to 15 percent O_2, averaged over any rolling 3-hour period. This ammonia emission concentration shall be verified by the continuous recording of the ammonia injection rate to A-2 and A-4 SCR Systems. The correlation between the gas turbine and HRSG heat input rates, A-2 and A-4 SCR System ammonia injection rates, and corresponding ammonia emission concentration at emission points P-1 and P-2 shall be determined in accordance with permit condition **AQ-29**~~30~~ **or District approved alternative method**. (Regulation 2-5)

(f) Precursor organic compound (POC) mass emissions (as CH_4) at P-1 and P-2 each shall not exceed 2.86 pounds per hour or 0.00128 lb/MM BTU of natural gas fired. (BACT)

(g) Sulfur dioxide (SO_2) mass emissions at P-1 & P-2 each shall not exceed 6.21 pounds per hour or 0.0028 lb/MM BTU of natural gas fired. (BACT)

(h) Particulate matter (PM10) mass emissions at P-1 & P-2 each shall not exceed 7.5 pounds per hour or 0.0036 lb PM10 per MM BTU of natural gas fired. (BACT)

Verification: The project owner shall submit to the District and CPM, quarterly reports for the proceeding calendar quarter within 30 days from the end of the quarter. The report for the fourth quarter can be an annual compliance summary for the preceding year. The quarterly and annual compliance summary reports shall contain the following information:

(a) Operating parameters of emission control equipment, including but not limited to ammonia injection rate, NO_x emission rate and ammonia slip.

(b) Total plant operation time (hours), number of startups, hours in cold startup, hours in warm startup, hours in hot startup, and hours in shutdown.

(c) Date and time of the beginning and end of each startup and shutdown period.

(d) Average plant operation schedule (hours per day, days per week, weeks per year).

(e) All continuous emissions data reduced and reported in accordance with the District approved CEMS protocol.

(f) Maximum hourly, maximum daily, total quarterly, and total calendar year emissions of NO_x, CO, PM10, POC and SOx (including calculation protocol).

(g) Fuel sulfur content (monthly laboratory analyses, monthly natural gas sulfur content reports from the natural gas supplier(s), or the results of a custom fuel monitoring schedule approved by the District.

(h) A log of all excess emissions, including the information regarding malfunctions/breakdowns.

(i) Any permanent changes made in the plant process or production, which would affect air pollutant emissions, and indicate when changes were made.

(j) Any maintenance to any air pollutant control system (recorded on an as performed basis).

In addition, this information shall be maintained on site for a minimum of five (5) years and shall be provided to District personnel on request.

AQ-20 The ~~project~~ owner**/operator** shall ensure that the regulated air pollutant mass emission rates from each of the gas turbines (S-1 & S-3) during a startup **or shutdown** does not exceed the limits established below. The ~~project~~ owner**/operator** shall not operate both of the Gas Turbines (S1 & S3) in Startup Mode at the same time. (PSD, CEC Conditions of Certification)

Pollutant	Cold Start-Up/ Combustor Tuning	Hot Start-Up	Warm Start-Up	Shutdown
	lb/start-up	lb/start-up	lb/start-up	lb/shutdown
NO_x (as NO_2)	480.0	95	125	40
CO	2514	891	2514	100
POC (as CH_4)	83	35.3	79	16

Verification: The project owner shall submit to the District and CPM the quarterly and annual compliance reports as required by **AQ-19**.

AQ-22 The ~~project~~ owner**/operator** shall not allow total combined emissions from the gas turbines and HRSGs (S-1, S-2, S-3 & S-4), S-5 Cooling Tower, and S-6 Fire Pump Diesel Engine, including emissions generated during gas turbine start-ups, combustor tuning, and shutdowns to exceed the following limits during any calendar day:

(a) 1,453 pounds of NO_x (as NO_2) per day (Cumulative Emissions)
(b) 1,225 pounds of NO_x per day during ozone season from June 1 to September 30. (CEC Condition of Certification)
(c) 7,360 pounds of CO per day (PSD)
(d) 295 pounds of POC (as CH_4) per day (Cumulative Emissions)
(e) 413 pounds of PM10 per day (PSD)
(f) 292 pounds of SO_2 per day (BACT)

Verification: The project owner shall submit to the District and CPM the quarterly and annual compliance reports as required by **AQ-19**.

AQ-23 The ~~project~~ owner**/operator** shall not allow cumulative combined emissions from the gas turbines and HRSGs (S-1, S-2, S-3 & S-4), S-5 Cooling Tower, and S-6 Fire Pump Diesel Engine, including emissions generated during gas turbine start-ups, combustor tuning, and shutdowns to exceed the following limits during any consecutive twelve-month period:

(a) 127 tons of NO_x (as NO_2) per year (Offsets, PSD)
(b) 330 tons of CO per year (Cumulative Increase, PSD)
(c) 28.5 tons of POC (as CH_4) per year (Offsets)
(d) 71.8 tons of PM10 per year (Cumulative Increase, PSD)
(e) 12.2 tons of SO_2 per year (Cumulative Increase, PSD)

Verification: The project owner shall submit to the District and CPM the quarterly and annual compliance reports as required by **AQ-19**.

AQ-26 The ~~project~~ owner**/operator** shall demonstrate compliance with **AQ-13 through AQ-16, AQ-19(a) through (d), AQ-20, AQ-22(a) and (b), AQ-23(a) and (b)** by using properly operated and maintained continuous monitors (during all hours of operation including gas turbine start-up, combustor tuning, and shutdown periods) for all of the following parameters:

(a) Firing Hours and Fuel Flow Rates for each of the following sources: S-1 & S-3 combined, S-2 & S-4 combined.

(b) Oxygen (O_2) concentration, Nitrogen Oxides (NO_x) concentration, and Carbon Monoxide (CO) concentration at exhaust points P-1 and P-2.

(c) Ammonia injection rate at A-1 and A-3 SCR Systems

The ~~project~~ owner**/operator** shall record all of the above parameters every 15 minutes (excluding normal calibration periods) and shall summarize all of the above parameters for each clock hour. For each calendar day, the ~~project~~ owner**/operator** shall calculate and record the total firing hours, the average hourly fuel flow rates, and pollutant emission concentrations.

The ~~project~~ owner**/operator** shall use the parameters measured above and District-approved calculation methods to calculate the following parameters:

(d) Heat Input Rate for each of the following sources: S-1 & S-3 combined, S-2 & S-4 combined.

(e) Corrected NO_x concentration, NO_x mass emission rate (as NO_2), corrected CO concentration, and CO mass emission rate at each of the following exhaust points: P-1 and P-2.

For each source, source grouping, or exhaust point, the ~~project~~ owner**/operator** shall record the parameters specified in **AQ-26(d) and (e)** at least once every 15 minutes (excluding normal calibration periods). As specified below, the ~~project~~ owner**/operator** shall calculate and record the following data:

(f) total heat input rate for every clock hour.

(g) on an hourly basis, the cumulative total heat input rate for each calendar day for the following: each gas turbine and associated HRSG combined and all four sources (S-1, S-2, S-3 and S-4) combined.

(h) the average NO_x mass emission rate (as NO_2), CO mass emission rate, and corrected NO_x and CO emission concentrations for every clock hour..

(i) on an hourly basis, the cumulative total NO_x mass emissions (as NO_2) and the cumulative total CO mass emissions, for each calendar day for the following: each gas turbine and associated HRSG combined and all four sources (S-1, S-2, S-3 and S-4) combined.

(j) For each calendar day, the average hourly heat input rates, corrected NO_x emission concentration, NO_x mass emission rate (as NO_2), corrected CO emission concentration, and CO mass emission rate for each gas turbine and associated HRSG combined~~ and the auxiliary boiler~~.

(k) on a daily basis, the cumulative total NO_x mass emissions (as NO_2) and cumulative total CO mass emissions, for the previous consecutive twelve month period for all four sources (S-1, S-2, S-3 and S-4) combined.

(1-520.1, 9-9-501, BACT, Offsets, NSPS, Cumulative Increase)

Verification: At least 30 days before first fire, the project owner shall submit to the CPM a plan on how the measurements and recordings required by this condition will be performed.

AQ-27 To demonstrate compliance with conditions **AQ-19(f), AQ-19(g), ~~thru~~ AQ-19(h)**, **AQ-22(d~~c~~), ~~thru~~ AQ-22(e), AQ-22(f)**, and **AQ-23(c), AQ-23(d), ~~thru~~ AQ-23(e)**, the owner/operator shall calculate and record on a daily basis, the Precursor Organic Compound (POC) mass emissions, Fine Particulate Matter (PM10) mass emissions (including condensable particulate matter), and Sulfur Dioxide (SO_2) mass emissions from each power train. The owner/operator shall use the actual heat input rates measured pursuant to **AQ-26**, actual gas turbine start-up times, actual gas turbine shutdown times, and CEC and District-approved emission factors developed pursuant to source testing under **AQ-30** to calculate these emissions. The owner/operator shall present the calculated emissions in the following format:

(a) For each calendar day, POC, PM10, and SO_2 emissions, summarized for each power train (gas turbine and its respective HRSG combined) and all four sources (S-1, S-2, S-3 & S-4) combined

(b) on a daily basis, the cumulative total POC, PM10, and SO_2 mass emissions, for each year for all **four** ~~eight~~ sources (S-1, S-2, S-3 & S-4) combined

(Offsets, PSD, Cumulative Increase)

Verification: The project owner shall submit to the District and CPM the quarterly and annual compliance reports as required by **AQ-19**.

AQ-29 Within **120**~~90~~ days of start-up of the RCEC, the owner/operator shall conduct a District-approved source test on exhaust point P-1 or P-2 to determine the corrected ammonia (NH_3) emission concentration to determine compliance with **AQ-19(e)**. The source test shall determine the correlation between the heat input rates of the gas turbine and associated HRSG, A-2 or A-4 SCR System ammonia injection rate, and the corresponding NH_3 emission concentration at emission point P-1 or P-2. The source test shall be conducted over the expected operating range of the turbine and HRSG (including, but not limited to, minimum and full load modes) to establish the range of ammonia injection rates necessary to achieve NO_x emission reductions while maintaining ammonia slip levels. The

owner/operator shall repeat the source testing on an annual basis thereafter. Ongoing compliance with **AQ-19(e)** shall be demonstrated through calculations of corrected ammonia concentrations based upon the source test correlation and continuous records of ammonia injection rate. The owner/operator shall submit the source test results to the District and the CPM**, in the case of initial source testing, within 150 days of startup, and for all source testing conducted thereafter,** within 60 days of conducting the tests. (Regulation 2, Rule 5)

Verification: The project owner shall notify the District and the CPM within seven (7) working days before the execution of the source tests required in this condition. Source test results shall be submitted to the District and to the CPM**, in the case of initial source testing, within 150 days of startup, and for all source testing conducted thereafter,** within 60 days of the date of the tests.

AQ-30 Within **120**~~90~~ days of start-up of the RCEC and on an annual basis thereafter, the owner/operator shall conduct a District-approved source test on exhaust points P-1 and P-2 while each gas turbine and associated Heat Recovery Steam Generator are operating at maximum load to determine compliance with **AQ-19(a), (b), (c), (d), (f), (g), and (h)** and while each gas turbine and associated Heat Recovery Steam Generator are operating at minimum load to determine compliance with **AQ-19(c) and (d)**, and to verify the accuracy of the continuous emission monitors required in **AQ-26**. **For the purposes of the testing at maximum load only, t**~~T~~he owner/operator shall test for (as a minimum): water content, stack gas flow rate, oxygen concentration, precursor organic compound concentration and mass emissions, nitrogen oxide concentration and mass emissions (as NO_2), carbon monoxide concentration and mass emissions, sulfur dioxide concentration and mass emissions, methane, ethane, and particulate matter (PM10) emissions including condensable particulate matter. The owner/operator shall submit the source test results to the District and the CEC CPM**, in the case of initial source testing, within 150 days of startup, and for all source testing conducted thereafter,** within 60 days of conducting the tests. (BACT, offsets)

Verification: The project owner shall notify the District and the CPM within seven (7) working days before the execution of the source tests required in this condition. Source test results shall be submitted to the District and to the CPM**, in the case of initial source testing, within 150 days of startup, and for all source testing conducted thereafter,** within 60 days of the date of the tests.

AQ-31 The owner/operator shall obtain approval for all source test procedures from the District's Source Test Section and the CPM prior to conducting any tests. The owner/operator shall comply with all applicable testing requirements for continuous emission monitors as specified in Volume V of the District's Manual of Procedures. The owner/operator shall notify the District's Source Test Section and the CPM in writing of the source test protocols and projected test dates at least 7 days prior to the testing date(s). As indicated above, the owner/operator

shall measure the contribution of condensable PM (back half) to the total PM10 emissions. However, the owner/operator may propose alternative measuring techniques to measure condensable PM such as the use of a dilution tunnel or other appropriate method used to capture semi-volatile organic compounds. The owner/operator shall submit the source test results to the District and the CPM**, in the case of initial source testing, within 150 days of startup, and for all source testing conducted thereafter,** within 60 days of conducting the tests. (BACT)

Verification: Approval of the source test procedures, as required in **AQ-31**, and the source test reports shall be deemed as verification for this condition. The project owner shall notify the District and the CPM within seven (7) working days before the execution of the source tests required in this condition. Source test results shall be submitted to the District and to the CPM**, in the case of initial source testing, within 150 days of startup, and for all source testing conducted thereafter,** within 60 days of the date of the tests.

AQ-32 Within **120**~~90~~ days of start-up of the RCEC and on a biennial basis (once every two years) thereafter, the owner/operator shall conduct a District-approved source test on exhaust point P-1 or P-2 while the gas turbine and associated Heat Recovery Steam Generator are operating at maximum allowable operating rates to demonstrate compliance with **AQ-25**. The owner/operator shall also test the gas turbine while it is operating at minimum load. If three consecutive biennial source tests demonstrate that the annual emission rates calculated pursuant to **AQ-25** for any of the compounds listed below are less than the BAAQMD trigger levels, pursuant to Regulation 2, Rule 5, shown, then the owner/operator may discontinue future testing for that pollutant:

Benzene	≤	6.4 pounds/year and 2.9 pounds/hour
Formaldehyde	≤	30 pounds/year and 0.21 pounds/hour
Specified PAHs	≤	0.011 pounds/year

(Regulation 2, Rule 5)

Verification: The project owner shall notify the District and the CPM within seven (7) working days before the execution of the source tests required in this condition. Source test results shall be submitted to the District and to the CPM**, in the case of initial source testing, within 150 days of startup, and for all source testing conducted thereafter,** within 60 days of the date of the tests.

AQ-33 The owner/operator shall calculate the SAM emission rate using the total heat input for the sources and the highest results of any source testing conducted pursuant to **AQ-34**~~**30**~~. If this SAM mass emission limit of **AQ-24** is exceeded, the owner/operator must utilize air dispersion modeling to determine the impact (in μg/m3) of the sulfuric acid mist emissions pursuant to Regulation 2-2-306. (PSD)

Verification: The project owner shall notify the District and the CPM within seven (7) working days before the execution of the source tests required in this condition. Source test results shall be submitted to the District and to the CPM**, in the case of initial source testing, within 150 days of startup, and for all source testing conducted thereafter,** within 60 days of the date of the tests.

AQ-34 Within **120**~~90~~ days of start-up of the RCEC and on a ~~semi-~~annual basis ~~(twice per year)~~ thereafter, the owner/operator shall conduct a District-approved source test on exhaust points P-1 and P-2 while each gas turbine and HRSG duct burner is operating at maximum heat input rates to demonstrate compliance with the SAM emission rates specified in **AQ-24**. The owner/operator shall test for (as a minimum) SO_2, SO_3, and H_2SO_4. ~~After acquiring one year of source test data on these sources, the owner/operator may petition the District to reduce the test frequency to an annual basis if test result variability is sufficiently low as determined by the District.~~ The owner/operator shall submit the source test results to the District and the CPM**, in the case of initial source testing, within 150 days of startup, and for all source testing conducted thereafter,** within 60 days of conducting the tests. (PSD)

Verification: The project owner shall notify the District and the CPM within seven (7) working days before the execution of the source tests required in this condition. Source test results shall be submitted to the District and to the CPM**, in the case of initial source testing, within 150 days of startup, and for all source testing conducted thereafter,** within 60 days of the date of the tests.

AQ-42 Pursuant to 40 CFR Part 72.30(b)(2)(ii) of the Federal Acid Rain Program, the owner/operator of the Russell City Energy Center shall submit an application for a Title IV operating permit to the BAAQMD at least 24 months before operation of any of the gas turbines (S-1~~,~~ **or** S-3~~, S-5, or S-7~~) or HRSGs (S-2~~,~~ **or** S-4~~, S-6, or S-8~~). (Regulation 2, Rule 7)

Verification: The project owner shall submit to the CPM copies of the Federal (Title IV) Acid Rain and (Title V) Operating Permit within 30 days after they are issued by the District.

PERMIT CONDITIONS FOR COOLING TOWERS

AQ-44 The ~~project~~ owner**/operator** shall properly install and maintain the S-5 cooling tower to minimize drift losses. The ~~project~~ owner**/operator** shall equip the cooling towers with high-efficiency mist eliminators with a maximum guaranteed drift rate of 0.0005 percent. The maximum total dissolved solids (TDS) measured at the base of the cooling towers or at the point of return to the wastewater facility shall not be higher than 6,200 ppmw (mg/l). The ~~project~~ owner**/operator** shall sample and test the cooling tower water at least once per day to verify compliance with this TDS limit. (PSD)

Verification: At least 120 days prior to construction of the cooling tower, the project owner shall provide the District and CPM an "approved for construction" drawing and specifications for the cooling tower and the high-efficiency mist eliminator.

AQ-45 The owner/operator shall perform a visual inspection of the cooling tower drift eliminators at least once per calendar year, and repair or replace any drift eliminator components which are broken or missing. Prior to the initial operation of the Russell City Energy Center, the owner/operator shall have the cooling tower vendor's field representative inspect the cooling tower drift eliminators and certify that the installation was performed in a satisfactory manner. Within **120**~~60~~ days of the initial operation of the cooling tower, the owner/operator shall perform an initial performance source test to determine the PM10 emission rate from the cooling tower to verify compliance with the vendor-guaranteed drift rate specified in **AQ-44**. The CPM may require the owner/operator to perform source tests to verify continued compliance with the vendor-guaranteed drift rate specified in **AQ-44**. (PSD)

Verification: The project owner shall submit to the District and CPM the quarterly and annual compliance reports as required by **AQ-19**.

REFERENCES

ARB 2011, California Air Resources Board, Air Designation Maps available on ARB website. http://www.arb.ca.gov/desig/adm/adm.htm. Accessed 2013.

BAAQMD 2007, Bay Area Air Quality Management District, Russell City Energy Center, Amended Final Determination of Compliance, June 19, 2007.

BAAQMD 2010, Bay Area Air Quality Management District, Prevention of Significant Deterioration Permit, Russell City Energy Center, Permit Application No. 15487, February 3, 2010.

BAAQMD 2013, Bay Area Air Quality Management District, Russell City Energy Center, Analysis of Requested Change of Conditions, draft document March 25, 2013.

CEC 2002a, California Energy Commission, Russell City Energy Center (01-AFC-7), Final Staff Assessment, June 2002.

CEC 2002b, California Energy Commission, Russell City Energy Center (01-AFC-7), Commission Decision, July 2002.

CEC 2007a, California Energy Commission, Russell City Energy Center (01-AFC-7C), Amendment No. 1, Staff Assessment – Part 1 and Part 2 Combined, June 2007.

CEC 2007b, California Energy Commission, Russell City Energy Center (01-AFC-7C), Amendment No. 1, Final Commission Decision, October 2007.

CEC 2010a, California Energy Commission, Russell City Energy Center (01-AFC-7C), Staff Analysis of Proposed Project Modifications, June 28, 2010.

CEC 2010b, California Energy Commission, Russell City Energy Center (01-AFC-7C), Supplemental Staff Analysis of Proposed Project Modifications, July 9, 2010.

CEC 2010c, California Energy Commission, Russell City Energy Center (01-AFC-7C), email from Mary Dyas (Energy Commission CPM) to RCEC: RCEC AQ-SC13, in lieu of complying with AQ-SC12 – Approved, July 12, 2010.

CEC 2010d, California Energy Commission, Russell City Energy Center (01-AFC-7C), Order Amending the Energy Commission Decision, August 11, 2010.

RCEC 2010a, Russell City Energy Company, LLC, Russell City Energy Center (01-AFC-7C), letter to Mary Dyas (Energy Commission CPM) stating Russell City Energy Center's intention to comply with AQ-SC13, in lieu of AQ-SC12, May 14, 2010.

RCEC 2010b, Russell City Energy Company, LLC, Russell City Energy Center (01-AFC-7C), letter to Mary Dyas (Energy Commission CPM) – Condition of Certification AQ-SC13 – Surrender of PM10 ERCs, July 15, 2010.

RCEC 2012, Russell City Energy Company, LLC, Russell City Energy Center (01-AFC-7C), Amendment No. 4, November 2012.

RCEC 2013, Russell City Energy Company, LLC, Russell City Energy Center (01-AFC-7C), Addendum to Amendment No. 4, March 20, 2013.

U.S. EPA 2012, U.S. Environmental Protection Agency, The Green Book Nonattainment Areas for Criteria Pollutants. http://www.epa.gov/oar/oaqps/greenbk/index.html. Accessed 2013.